

## REMARKS

Applicant respectfully submits that the present invention is distinguishable over each of the prior art references cited by the Examiner, and in support presents the following arguments. Claims 1-10, 14-20, and 35-50 are pending. Claims 11-13 and 21-33 are canceled and claim 34, which was added in Applicant's previous response, is not entered. Claims 1-10 are withdrawn from examination. Claims 14 and 20 are amended and claims 35-50 are added. Claim 20 was amended to correct a clerical error, and was not made to obviate any prior art. In addition to amendments noted below, applicant has rewritten claim 14 so that it no longer depends from withdrawn claim 1.

In accordance with the Examiner's request to submit evidence that the solution of Kalota could not form a conversion surface, applicant submits proof and declarations in support of the fact that no phosphate conversion coating is formed on steel after the application of the phosphate containing lubrication solution of Kalota. As new claims 35 and 41 both require that the metal layer to be a steel alloy, Kalota does not anticipate as it does not form a conversion surface. Applicant submits that no new matter has been added. Paragraph [0043] gives an example of providing support on the metal layer that is a steel alloy. Applicant believes that claims 14-20 and 35-50 are distinguishable over prior art as discussed below, and are in condition for allowance. Furthermore, Applicant has added 16 new claims, of which three (3) are independent. Applicant has canceled 16 claims, of which more than three (3) were independent. Therefore, Applicant submits that no additional fees are due for the newly added claims.

## Response to 35 U.S.C. § 102

### Cited Art WO 98/08919 ("Kalota") Fails to Teach Each and Every Element of the Current Invention

Applicant respectfully traverses the initial rejection of claims 14-15 and 18-20 under 35 U.S.C. § 102(b) by WO 98/08919 filed in the name of Kalota, et al. ("Kalota"). Claim 14 requires that the target fluid comprises a hydrocarbon. Kalota expressly teaches away from using hydrocarbons as Kalota was attempting to create a working fluid that did not require reclaiming or special disposal methods. In fact, Kalota specifically noted the undesirability of using oil, as "[w]orker safety can be an issue with presently employed oil-containing water soluble metal working fluids." (p. 2 lines 21-22). As such, Kalota is missing the element of the target fluid comprising a hydrocarbon. Consequently, Kalota does not teach each and every element of claim 14. As claims 15 and 18-20 depend on claim 14, Applicant respectfully requests the Examiner to withdraw the rejection based of Kalota and place the aforementioned claim in condition for allowance.

### Japanese Patent No. JP62-190297 (JP'297) Fails to Teach Each and Every Element of the Current Invention

Claims 14 and 18-20 are also initially rejected as allegedly being anticipated by JP 62-190297 ("JP 297"). Claim 14 includes that the phosphorus-containing solution is essentially free of alcohol. JP 297 identifies polyhydric alcohol as "an essential component". (Abstract). As such, JP 297 teaches away from and is missing an element of claim 14. Applicant notes that paragraph [0016] of the instant application discusses the removal of any alcohol in order to create the phosphorus-containing solution by stating that the "intermediate solution is combined with the carrier fluid and the water or other solvent is largely removed to create the phosphorus-containing solution. Preferably the solvent, such as alcohols . . . ." Therefore, since the solvent

can be alcohol, and essentially all solvent is removed to create the phosphorus-containing solution, the phosphorus-containing solution is essentially free of alcohol. Since JP 297 required alcohol as an essential component, and the current invention is essentially free of alcohol, JP 297 fails to teach each and every element of amended claim 14.

In that claims 18-20 depend from claim 14, they are distinguishable on similar grounds.

### **Response to 35 U.S.C. § 103**

#### **WO 98/08919 ("Kalota") and U.S. Patent No. 4,765,917 ("Otaki") Fail to Teach Each and Every Element of the Current Invention**

Claims 16-17 are rejected as allegedly being obvious under 35 U.S.C. § 103(a) by Kalota in view of U.S. Patent No. 4,765,917 filed in the name of Otaki et al. ("Otaki"). The Examiner alleges that Kalota discloses all of the limitations of claims 16-17 except the addition of ammonium acetate. Applicant respectfully traverses this argument as noted above in that Kalota fails to teach that the target fluid comprises a hydrocarbon.

Additionally, Applicant submits that one skilled in the art of conversion surfaces would not look to metal working (Kalota) or hot forging (Otaki) when looking to design a process for creating a conversion surface as the aforementioned processes are in disparate fields. Kalota is most concerned with metal working and providing a non-oil based lubricating fluid useful in cutting, grinding, shaping and other metal working operations. (See Abstract) The purpose is for removal of heat from the work piece and tool, reduction of friction among chips, tool and work piece, removal of metal debris produced by the work. (Page 1, ll, 13-18). Furthermore, compositions in hot forging are not designed to build or modify surfaces but are designed to take away heat and to wet the metal, as well as reduce press load. (See generally Background of the

Invention, Otaki). In fact, Otaki teaches the use of a phosphate compound for extreme pressure properties, not for the purpose of building a conversion surface. (Column 2, 1. 30). In summary, Otaki teaches an entirely different and disparate process from the current claimed invention.

With that said, even a person of ordinary skill in the art would combine Kalota and Otaki, the combination of Kalota and Otaki is missing elements of the current invention such as the target fluid comprising a hydrocarbon, in addition to the formation of a phosphate-metal layer. As the combination of the two references does not teach or suggest each and every element of claim 16, applicant respectfully submits that claim 16 is in condition for allowance.

Claim 17 incorporates the distinguishing characteristics of claim 16 and is distinguishable on the same grounds.

#### **JP 297 and Kalota Fail to Teach Each and Every Element of the Claimed Invention**

The Examiner discusses combining JP 297 with Kalota relative to claim 15. As stated above, Kalota teaches away from using a hydrocarbon, and JP 297 discloses that alcohol is an essential component of the solution. Therefore, at least two elements of the current claim are missing from the prior art. As claim 15 incorporates the distinguishing characteristics of claim 14, Applicant respectfully submits that claim 15 is in condition for allowance.

#### **JP 297, Kalota, and Otaki Fail to Teach Each and Every Element of the Claimed Invention**

The Examiner discusses combining JP 297 with Kalota and Otaki relative to claims 16-17. As noted previously, JP 297 requires the presence of alcohol and Kalota teaches away from the use of a hydrocarbon. As claims 16 and 17 require the presence of a hydrocarbon and their phosphate-containing solutions are essentially free of alcohol, and Otaki does not teach either

element, the combination of JP 297, Kalota and Otaki fails to teach each and every element of the claimed invention. As such, applicant respectfully requests Examiner to place claims 16-17 in condition for allowance.

**Applicant Believes Newly Added Claims 34-49 to be in Condition for Allowance**

Newly added claim 35 contains all of the limitations of currently amended claim 14, except that claim 35 does not require that the target fluid comprising a hydrocarbon. In addition, claim 35 is limited to metal substrate that is a steel alloy. Support may be found in the specification in the examples section, as is provided for the Examiner's convenience below:

[0043] Laboratory measurements have revealed the nature of the surface layer. Application of the phosphorus-containing solution to 1018 carbon steel at 180°F was followed by a series of analytical tests. Optical microscope examination (20X) clearly reveals a fairly uniform surface layer from the application of the phosphorus-containing solution of the invention to the carbon steel. Scanning electron microscopy (SEM) of the steel surface after the application of the phosphorus-containing solution in the oil-based mixture shows a relatively smooth layer. State-of-the-art surface analytical instrumental measurements have shown that a thin surface conversion layer, ranging from 15-80 Angstroms depending upon conditions and concentrations, is formed. This layer is of variable composition and contains Fe, O, P, N, and K. The layer is believed to form from the reaction of phosphate species in the mixtures with the oxide surface of the metal (Fe), initially of about 25 Angstroms in thickness. The surface compounds resulting from this chemical reaction resulting in the conversion layer appear to range from the simple  $\text{FePO}_4$  to more complex phosphates such as  $\text{NH}_4\text{Fe}_2[\text{PO}_4]_2$ ,  $\text{K}_3\text{Fe}_3[\text{PO}_4]_4 \cdot x\text{H}_2\text{O}$ ,  $\text{NH}_4\text{Fe}_3[\text{H}_2\text{PO}_4]_6[\text{HPO}_4]_2 \cdot x\text{H}_2\text{O}$ ,  $\text{KFe}_2[\text{HPO}_4]_2[\text{PO}_4]$ , and related compounds, depending upon operating conditions. Coordination of the phosphate structure to the surface metal (Fe) ions in the surface layer is believed to be the origin of the stability of these surface compounds.

As noted previously, applicant submits proof and affidavits in support of the fact that no phosphate conversion coating is formed on steel after the application of the phosphate containing lubrication solution of Kalota. Consequently, Kalota fails to teach a process for creating a phosphate-metal layer on a metal substrate, wherein the metal substrate is a steel alloy. As claim

35 contains limitations which are not found in Kalota, JP 297, or Otaki (phosphorus-containing solution being essentially free of alcohol; wherein the metal substrate is a steel alloy), applicant submits that claim 35 is in condition for allowance, along with all claims dependant thereon.

Newly added claim 41 contains all of the limitations of previously submitted claim 15, in addition to requiring that the metal substrate is a steel alloy. Applicant has submitted proof and affidavits in support of the fact that no phosphate conversion coating is formed on steel after the application of the phosphate containing lubrication solution of Kalota. Consequently, Kalota fails to teach a process for creating a phosphate-metal layer on a metal substrate, wherein the metal substrate is a steel alloy. As newly added independent claim 41 requires this additional limitation, applicant submits that claim 40 and all claims dependent thereon are in condition for allowance.

Claim 46 contains all of the limitations of previously submitted claim 15, in addition to requiring the target fluid to comprise a hydrocarbon. Applicant believes the comments above relating to Kalota apply to newly added claim 46, therefore, applicant respectfully requests that the Examiner place newly added claim 46 in condition for allowance as Kalota, JP 297 and Otaki do not teach each and every element of newly added claim 46. As claims 47-50 depend upon claim 46, and applicant submits that claim 46 is in condition for allowance, applicant submits that claims 47-50 are also in condition for allowance.

### **CONCLUSION**

In commenting upon the references and in order to facilitate a better understanding of the differences that are expressed in the claims, certain details of distinction between the references and the present invention have been mentioned, even though such differences do not appear in all

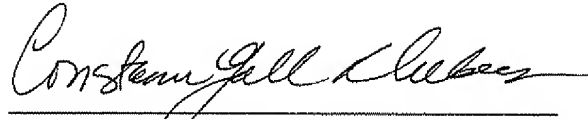
of the claims. It is not intended by mentioning any such unclaimed distinctions to create any implied limitations in the claims. Not all of the distinctions between the prior art and Applicant's present invention have been made by Applicant. For the foregoing reasons, Applicant reserves the right to submit additional evidence showing the distinctions between Applicant's invention to be unobvious in view of the prior art.

The foregoing remarks are intended to assist the Examiner in re-examining the application and in the course of explanation may employ shortened or more specific or variant descriptions of some of the claim language. Such descriptions are not intended to limit the scope of the claims; the actual claim language should be considered in each case. Furthermore, the remarks are not to be considered to be exhaustive of the facets of the invention, which render it patentable, being only examples of certain advantageous features and differences that applicant's attorney chooses to mention at this time.

Reconsideration of the application and allowance of all of the claims are respectfully requested. In view of the foregoing Response, applicant respectfully submits that all of the claims are allowable, and Applicant respectfully requests the issuance of a Notice of Allowance. Should further discussion regarding the application be desired by the Examiner, a telephone conference is respectfully requested. I can be reached at (713) 221-3306. Applicant requests a Two-Month Extension of Time and a payment of \$230 is included. The Commissioner is authorized to charge BRACEWELL & GIULIANI LLP, Deposit Account 50-0259 (27435.002) in the amount of any deficiency.

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Respectfully submitted,



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